DENON

Hi-Fi Component

SERVICE MANUAL

STEREO CASSETTE TAPE DECK

MODEL DR-M20

NIPPON COLUMBIA CO., LTD.

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FEATURES

- Computer-controlled servo technology
  - Closed-loop dual-capstan tape transport.
  - Silent, soft-touch controls provide maximum ease-of-use.
  - Computer-controlled, full-logic tape controls enable fool-proof operation.
- Three-head design utilizes DENON's new SF record/playback combination head assembly.
- Computing tape counter with 4-digit readout and memory stop.
- Dolby-C noise reduction systems (Double Dolby System).
- Extended range, dual-color fluorescent peak meters.
- Auto tape selector.
- Recording Bias adjustment.

SPECIFICATIONS

- Type . . . . . Vertical tape loading 4-track 2-channel stereo cassette tape deck
- Heads . . . . . SF Record/Playback combination head x 1
  Erase head (Ferrite) x 1
- Motors . . . . . Electronic servo DC motor (for capstan) x 1
  DC motor (for reel winding) x 1
- Tape Speed . . . . . 4.8 cm/sec.
- Fast forward, rewind time . . . Approx. 90 sec. with a C-60 cassette
- Recording bias . . . . . 105 kHz
- Overall S/N ratio . . . . . Dolby C NR on ... more than 73 dB (CCIR/ARM)
  (at 3% THD level)
- Overall fequency response. . . . 25 ~ 19,000 Hz ±3dB (at –20 dB METAL tape)
- Channel separation . . . . . More than 40 dB (at 1 kHz)
- Crosstalk . . . . . More than 65 dB (at 1 kHz)
- Wow & flutter . . . . . 0.045% wrms (JIS method)
- Inputs
  line . . . . . 100mV (–18 dB) input level at maximum
  Input impedance: 50 kohm unbalanced
- Outputs
  line . . . . . 775mV (0 dB) output level at maximum (with 47 kohm load, recorded level of 200 pwb/mm)
  Headphone . . . . . 1.2mW output level at maximum (optimum load impedance 8 ohm ~ 1.2 kohm)
- Accessories . . . . . Parallel pin cord x 2
- Power supply . . . . . 50 Hz/60 Hz compatible, voltage is shown on rating label
- Power consumption 18W
- Dimensions . . . . . 434 (W) x 115 (H) x 286 (D) mm
- Weight . . . . . 5.6 kg

■ **Above specifications and design styling are subject to change for improvement.**

■Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

WARNING:

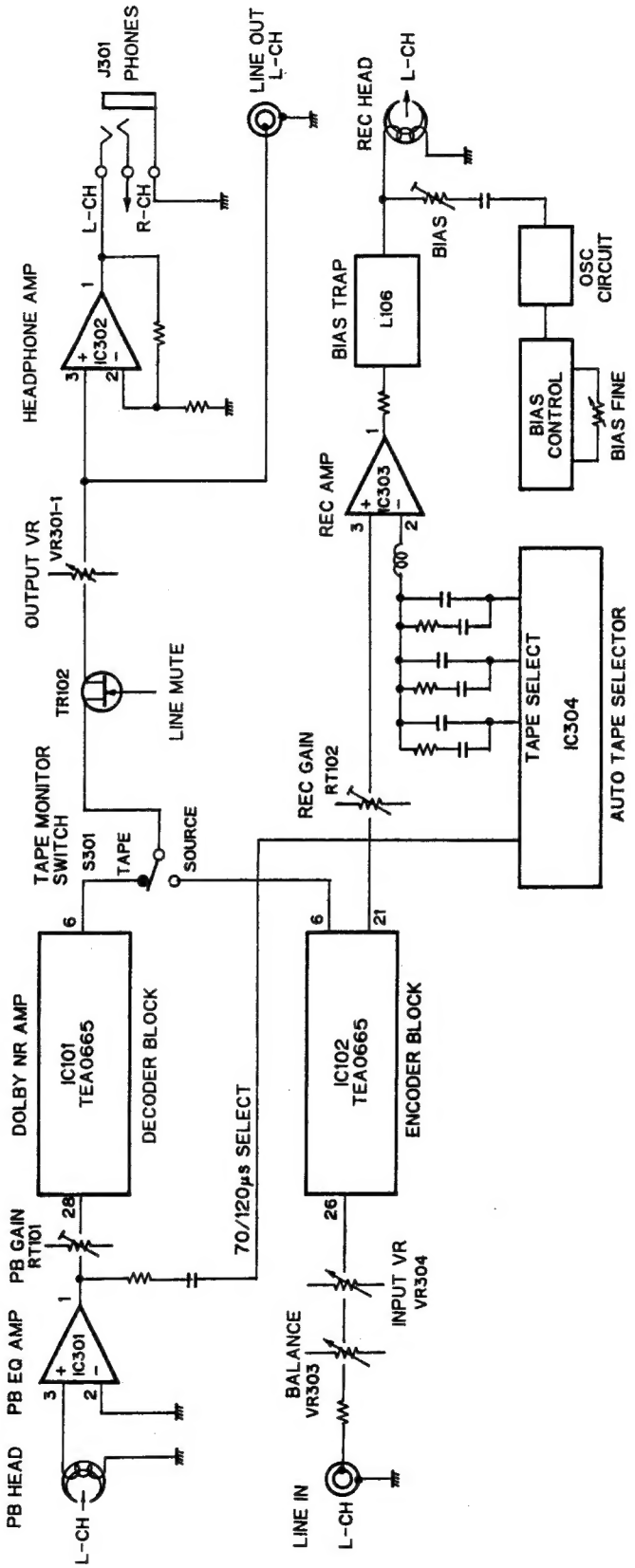
1. Component parts

Parts marked with ⚠ and/or shading in this service manual have special characteristics important to safety. Besure to use the specified parts for replacement.

2. Leakage current

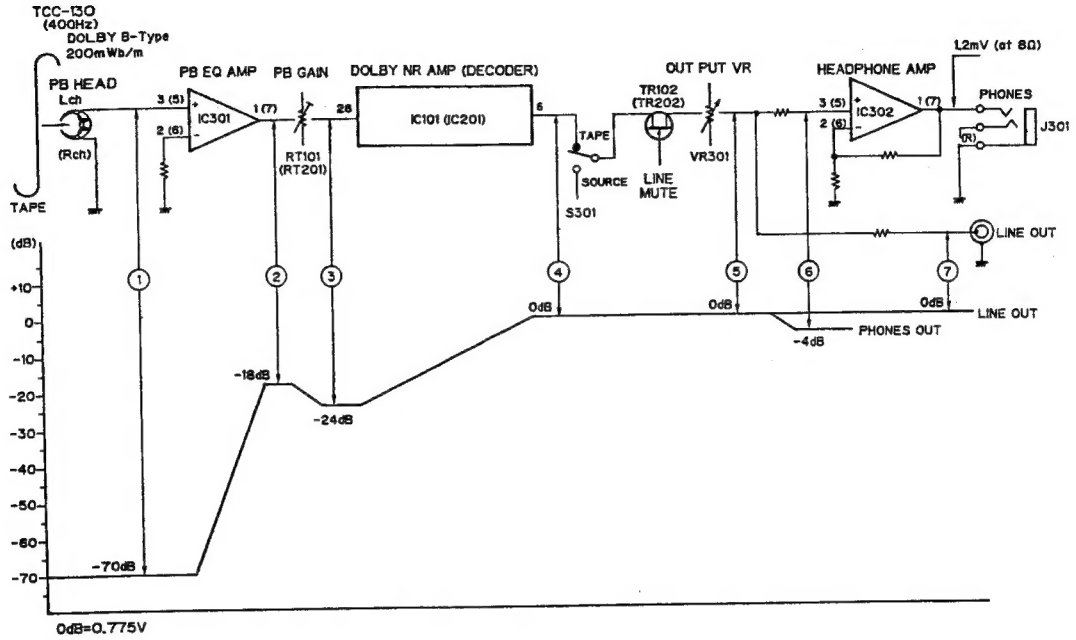
Before returning the appliance to customer, test the leakage current when the power plug is connected. Use a calibrated (with an error of not more than 5%) leakage current tester and measure the leakage current from any exposed metal to the earth ground. Reverse the power plug polarity and test the above again.
Any current measured MUST NOT EXCEED 0.5 milliamps. Corrective measure must be taken if it exceeds the limit.

BLOCK DIAGRAM

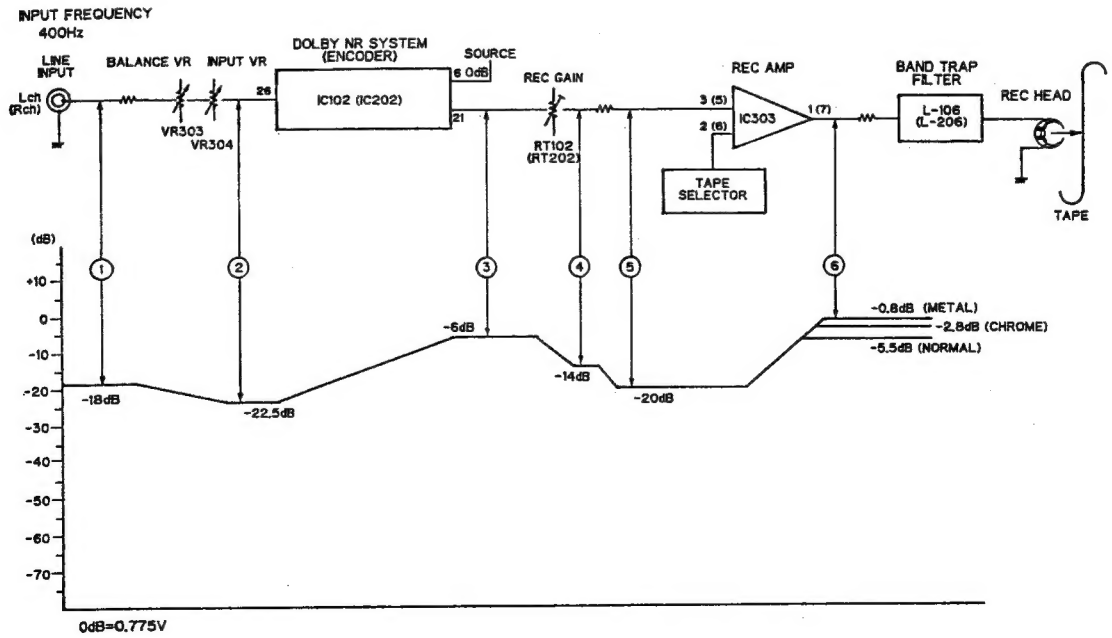


LEVEL DIAGRAM

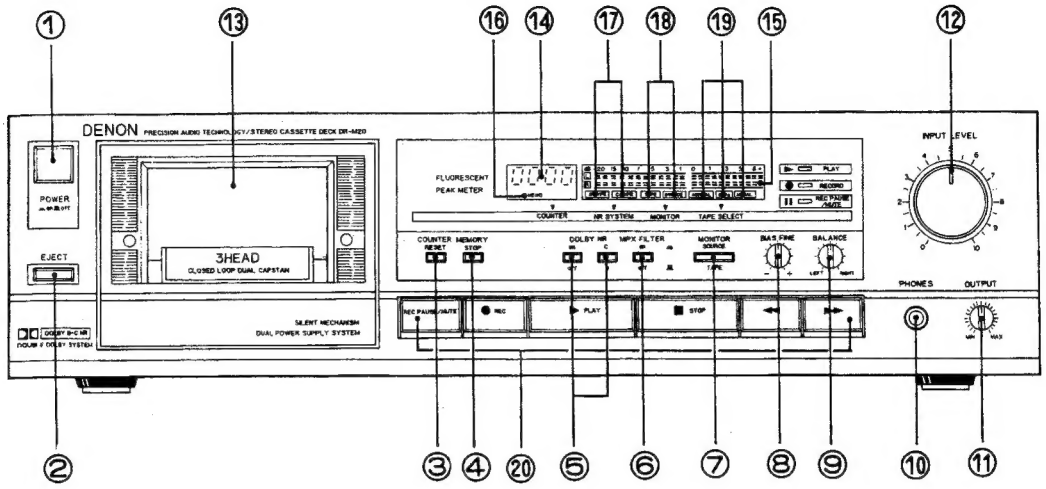
PLAYBACK SYSTEM



RECORDING SYSTEM



PART NAMES AND FUNCTIONS



1. POWER switch
Controls the supply of AC power to the deck. One push turns the deck on, a second push turns it off. The deck remains in a stand-by (non-operative) mode for approximately 4 seconds after it is switched on.

2. EJECT button
Press this button to eject the cassette. When the deck is operating (tape is running), press the stop (■) key first to stop the tape transport; then press the EJECT button.

3. COUNTER RESET button
Operation of the button resets the counter to all zero.

4. MEMORY STOP button
During rewinding operations, the tape will stop at the "0000" counter point automatically when this button is pressed in.

5. DOLBY NR switches
The left Dolby NR switch activates (in) or deactivates (out) the deck's Dolby noise reduction circuitry. The right switch selects between Dolby B-Type (out) or C-Type NR (in).

6. MPX FILTER switch
The MPX FILTER switch should be used to prevent interference with the Dolby NR circuit when making Dolby NR encoded recordings of FM stereo programs. When making Dolby NR encoded recordings from any program source other than FM stereo, leave this switch in the "off" (out) position.

7. MONITOR switch
The SOURCE (in) position of this switch allows you to monitor the source program before it is recorded. The TAPE (out) position of this switch is used for tape playback monitoring or simultaneous monitoring during recording.

8. BIAS FINE ADJ control
(for NORMAL and CrO_2 tape)
Adjust the bias according to the tape characteristics. Standard biasing is obtained at the center click-stop position.

9. BALANCE controls
This is the knob to adjust the recording level balance between the left and right channels. Turn it counterclockwise to reduce the right channel's level and clockwise to reduce the left channel's. Usually, put the knob at the center click position.

10. PHONES jack
For private music enjoyment without disturbing others, or for monitoring a recording, a set of headphones may be plugged in. Impedance should be from 8 to 1200 ohms.

11. OUTPUT LEVEL control
This control adjusts playback, recording monitor, and headphones output levels for the both channels simultaneously.

12. INPUT LEVEL controls
The recording input level is adjusted by this knob. The levels in the left and right channels can be changed simultaneously.

13. Cassette compartment cover
When a cassette tape is inserted and the door is closed, the tape is automatically wound up for about 0.3 sec to eliminate the slack.

14. TAPE COUNTER
A four-digit readout indicates the present tape count position.

15. FLUORESCENT PEAK METERS
These meters indicate recording or playback peak levels for each channel.

16. MEMORY indicator
When the memory switch is turned on, the letters of "MEMO" will be displayed.

17. NR SYSTEM indicator
This indicator light is interlocked with the Dolby NR switch and informs the user that Dolby NR is in use as well as which (B or C) Type.

18. MONITOR indicator
This indicator light is interlocked with the MONITOR switch to inform the use of the selected monitoring source — TAPE or SOURCE.

19. TAPE SELECT indicator
This indicator light is interlocked with the Auto Tape Select feature which automatically adjusts the deck to the type of tape in use. (NORMAL, CrO_2 or METAL).

20. Tape transport controls

▶ PLAY	▶ PLAY KEY	Press to playback tape.
■ STOP	■ STOP KEY	Press to stop tape in any mode.
◀◀	◀◀ REW KEY	Press for fast rewind.
▶▶	▶▶ FF KEY	Press for fast forward tape winding.
● REC	● RECORD KEY	To begin recording, press the RECORD and PLAY keys simultaneously. If only the RECORD key is pressed, the deck is placed in the REC PAUSE (record standby) mode.
REC PAUSE/MUTE	REC PAUSE/MUTE KEY	Press this key for less than 0.5 sec if you want to change from the recording state into the pause state. When this key is pressed for more than 1 sec for making a non-recorded part between two melodies, about 5 sec of non-recorded part can automatically be created.

• Outline of the Mechanism Control Microcomputer

The function of the microcomputer, which is applied to the uni-directional transport cam drive control cassette deck mechanism, will receive an outside signal from the operation switch (operations such as PLAY, REC, STOP, FF) during the recognition of the current condition or from the surrounding circuits of the microcomputer (counter, cam encoder, reel pulse, etc.) and sends the appropriate control signal.

To the mechanism: rotational direction of the reel motor, speed, stop, rotational direction of the cam motor, stop.

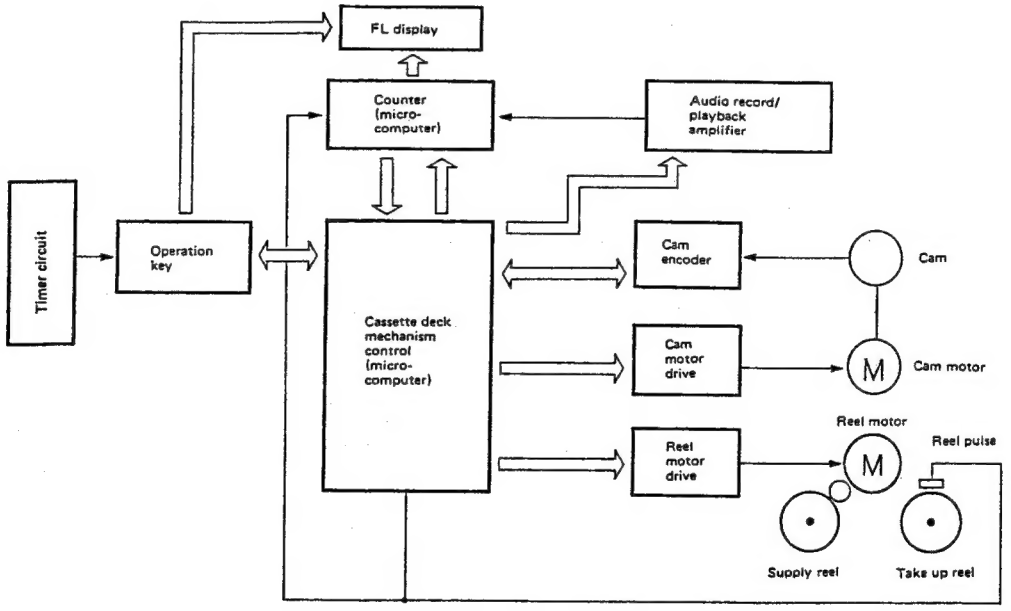
To the counter: makes an output of the mechanism run mode command (REW, FF, PAUSE, PLAY).

To the display: REC, PAUSE (REC MUTE during flash).

In addition, the following points are taken into consideration.

(1) Stable and accurate cam rotation position control is required since a cam drive method is employed to make the mechanism silent. Accurate rotation position control is performed by using a cam drive with a rotary encoder detected digital feedback servo.

(2) Since the leading time of the cam drive is slower when compared to that of the plunger method, problems will arise when attempting record/playback or stop at the designated tape position from FF or REW, since tape overrun occurs.



DISASSEMBLY INSTRUCTIONS

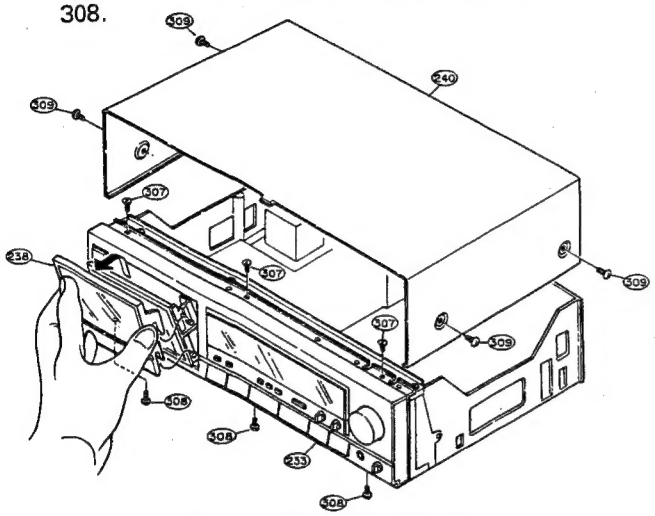
1. How to Remove the Front Panel

(1) Unscrew the 4 screws 309 from both sides of the top cover 240 and take off the top cover by pulling it up.

(2) Press the eject knob 231, open the cassette window 238 and take off the mechanism, as shown in the diagram.

Note: Be careful when handling the cassette window, as it is easily scratched.

(3) The front panel can be removed by unscrewing the 3 upper screws (3x8 CFTS S tight) 307 from the front panel 233 and the 3 lower screws (3x8 CBTS P tight) 308.



2. How to Remove the Mechanisms

(1) Remove the top cover 240 and the front panel 233. (Refer to section 1)

(2) Unscrew the 2 mechanism holding screws (3x6 CBTS S tight) 304 from the bottom surface of the chassis 201.

(3) Unscrew the 2 screws (3x6 CBTS S tight) 304 holding the angle 210 and the mechanism 207 and the 3 chassis holding screws 301, 310 and remove the angle.

(4) Remove the connectors with lead wires, which runs from the mechanism section, from the circuit board.

Audio circuit board side 4P connector CN301
6P connector CN302

Logic circuit board side 6P connector CN1
7P connector CN3
8P connector CN2

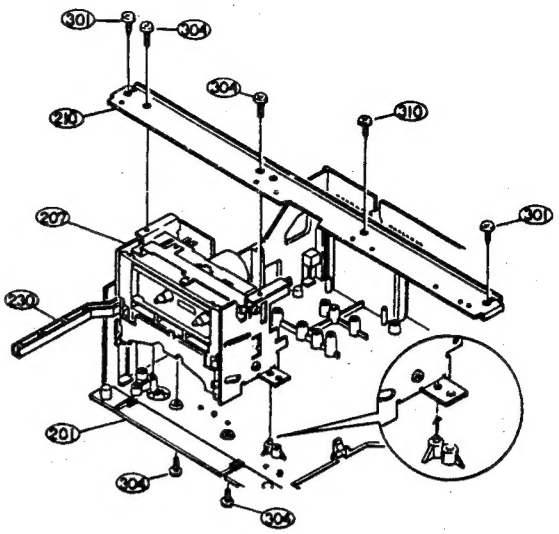
Note: When assembling, check to make sure the connectors are inserted correctly.

(5) Pull out the power switch lever 230 from the power switch 259.

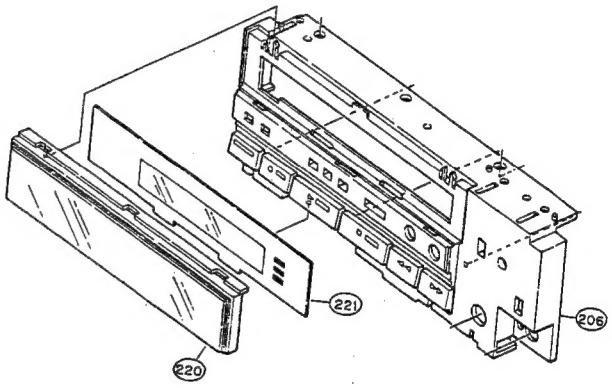
(6) Remove the eject knob 231.

(7) The mechanism can be removed by holding the mechanism and pulling up.

Note: When assembling, do so after checking to make sure the 2 stay holes on the lower side of the mechanism unit are matched with the chassis protrusions.



3. How to Remove the Meter Window and the Color Filter



(1) Remove Top Cover (240) and Front Panel (233) (Refer to Section 1)

(2) Meter Window (220) can be removed by pulling up.

(3) Color Filter (221) can be removed after Meter Window (220) is removed.

4. How to removed the Meter Holder and the Counter/Meter Circuit Board, the LED circuit Board.

(1) Remove the top cover (240) and the front panel (233). (Refer to section 1)

(2) Remove the angle (210). (Refer to section 2)

(3) Remove the 2 screws (3x8CFTS S tight) (307) which secure meter holder (242). Then the meter holder can be removed.

(4) By unscrewing the 2 screws (3x6 CBS) (303) holding the counter/meter circuit board, it can be removed.

(5) By unscrewing the 1 screw (3x6 CBS) (303) holding the LED circuit board, it can be removed.

5. How to Remove the Front Esc Ass'y

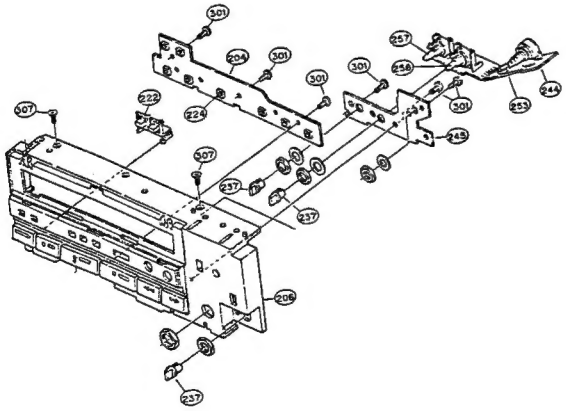
(1) Remove the top cover (240) and the front panel (233). (Refer to section 1)
(2) Remove the angle (210). (Refer to section 2)
(3) Remove the meter window (220) and the color filter (221). (Refer to section 3)
(4) Unscrew the 2 nuts holding the output volume (237) and the headphone jack (255). Then the front esc ass'y (206) can be removed.

6. How to Remove the Volume Circuit Board

(1) Remove the top cover 240 and the front panel 233. (Refer to section 1)
(2) Remove the angle 210 (Refer to section 2)
(3) Remove the meter window 220 and the color filter 221. (Refer to section 3)
(4) Remove the front escuchion 206. (Refer to section 4)
(5) By unscrewing the 3 screws (3x8 CBTS P tight) 301 holding the Volume plate 245 and loosening the 2 hooks on the front escuchion ass'y 206 holding the Volume circuit board 244, it can be removed.
(6) Unscrew the 3 nats holding the 3 Volumes. Then the Volume circuit board 244 can be removed.

7. How to Remove the Control Circuit Board

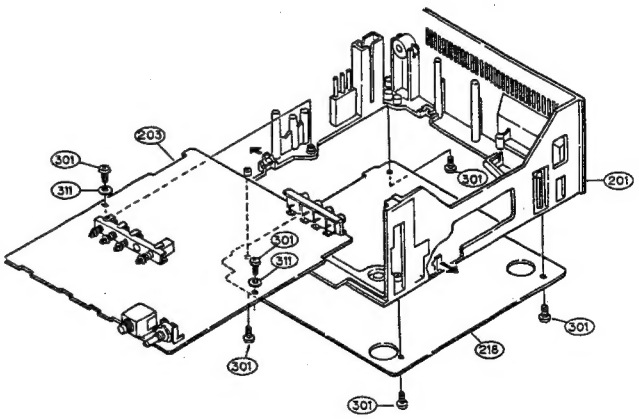
(1) Remove the top cover 240 and the front panel 233. (Refer to Section 1)
(2) Remove the angle 210. (Refer to section 2)
(3) Remove the meter window 220 and the color filter 221. (Refer to section 3)
(4) Remove the front escuchion 206. (Refer to section 4)
(5) By unscrewing the 3 screw (3x8 CBTS P tight) 301 holding the control circuit board and loosening the 2 hooks on the front escuchion Ass'y 206 holding the control circuit board 204, it can be removed.



Note: When replacing the tact switch 224, always check to make sure that it is not floating above the circuit board. If it is floating, the switch will be in the on condition when the set is assembled.

8. How to Remove the Audio Circuit Board

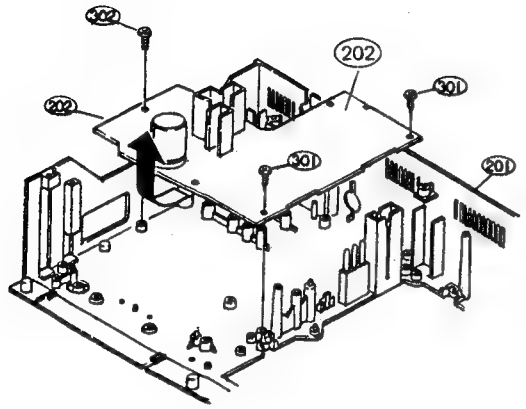
(1) Remove the top cover 240 and the front panel 233. (Refer to section 1)
(2) Remove the angle 210 (Refer to section 2)
(3) Remove the meter holder 242. (Refer to section 4)
(4) Remove the front escuchion 206.
(5) Remove the volume plate 245. (Refer to section 6)
(6) Remove the control circuit board 204. (Refer to section 7)
(7) Remove the connectors from the audio circuit board 203.
(8) Unscrew the 4 bottom cover holding screws (3x8 CBTS P tight) 301 on the back side of the chassis 201 and remove the bottom cover 218.
(9) By loosening the 2 hooks on the chassis holding the audio circuit board 203, the audio circuit board can be removed.



Note: Most repairs to the audio circuit board can be performed by removing the bottom cover on the chassis. Refer to the above procedure only when necessary.
When reassembling, follow the procedures in reverse order; however, if each of the various parts are not assembled properly in their respective position, the set cannot be assembled. When assembling, check the work of each step carefully.

9. How to Remove the Logic Circuit Board

(1) Remove the top cover 240. (Refer to section 1)
(2) Remove the various connectors from the logic circuit board 202.
(3) Unscrew the screws (3x8 CBTS P tight) 301 holding the logic circuit board.
(4) By pulling up the logic circuit board 202, if can be removed.



10. How to Remove the Power Switch Circuit Board

(1) Remove the top cover 240. (Refer to section 1)
(2) Unscrew the 1 screw (3x8 CBTS P tight) 301 holding the bracket 216 of the power switch circuit board 215.
(3) By pulling the power switch lever 230 out of the power switch 259, the power switch circuit board 215 can be removed upwards.

ADJUSTING AND CHECKING THE MECHANISM SECTION

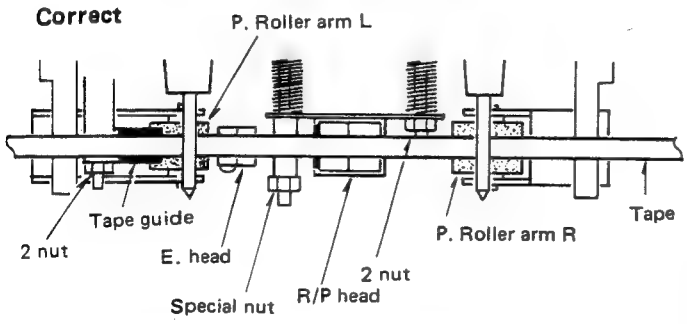
1. Replacing the Pinch Roller.

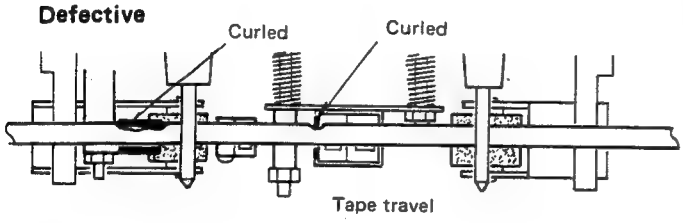
Before replacing the pinch roller, clean the tape contact surface of the pinch roller and the capstan shaft.

Most causes of poor tape transport can be traced to dirty pinch rollers and capstan shafts.

The right side pinch roller 23 can be taken out by removing spring 24 and slit washer 317. In the same manner, the left side pinch roller 104 can be taken out by removing spring 106 and slit washer 317. After replacing, play a padless C-90 tape and check for tape curls at the head tape guide section.

In addition, in the playback mode, check to make sure that the right side pinch roller contacts the capstan shaft before the left side pinch roller contacting.

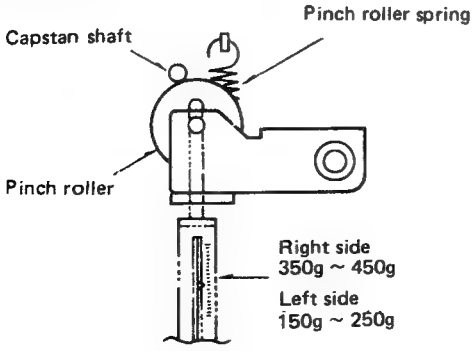




2. Checking the Pressure Force of the Pinch Roller

In the playback mode, hook a spring weight onto the bracket at the center of the pinch roller. After separating the pinch roller from the capstan shaft, allow the pinch roller to contact the capstan shaft again. When the pinch roller starts to rotate, check to make sure the rod type spring weight reading is 350g—450g for the right side and 150g ~ 250g for the left side.

If it is not within the normal range, replace the pinch roller spring 24 or 106.



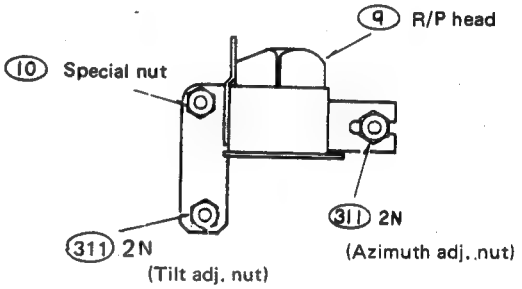
3. Replacing the Record/Playback Head

* Before replacing, remove the front panel 233.

(1) How to remove the R/P HEAD.

1) Next, Take out the azimuth adjustment NUT 311, tilt adjustment NUT 311, and the height adjustment Special nut 10 loosening them alternately.
If they are not loosened alternately, the R/P HEAD base may become warped.

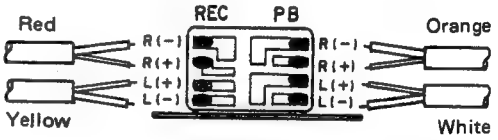
2) By unsoldering the HEAD WIRES on the circuit board section of the R/P HEAD, the entire R/P HEAD can be taken off the mechanism unit.



(2) How to assemble the R/P HEAD.

Reverse the above (1) procedures for removing the R/P HEAD.

* Solder the HEAD WIRES according to the diagram above.



4. Adjusting the R/P HEAD

(1) Height adjustments (Use the head adjusting jig THG-801

1) Set the THG-801 tool plate on the mechanism unit; turn the height adjustment Special nut 10 and adjust so that the 3.8 mm measure section of the THG-801 (tool grip) can pass without contacting the tape guide of the R/P HEAD 9.

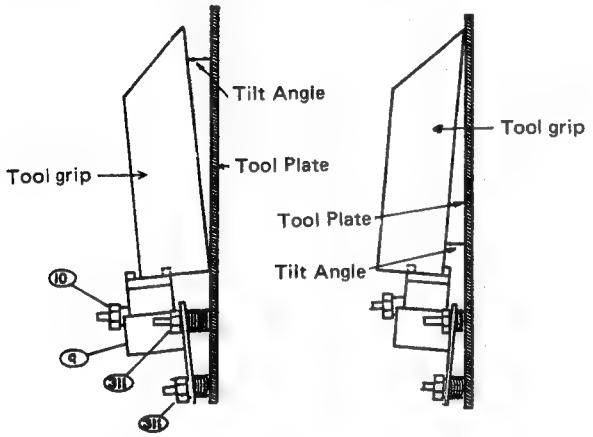
2) When adjusting the height, make sure the R/P HEAD is not tilted by turning the azimuth adjustment nut 311 nut, and checking with your eyes.

*Never allow the THG-801 (tool grip) to hit the tape contact surface of the R/P HEAD strongly. It may scratch the surface.

(2) Adjusting Tilt Angle

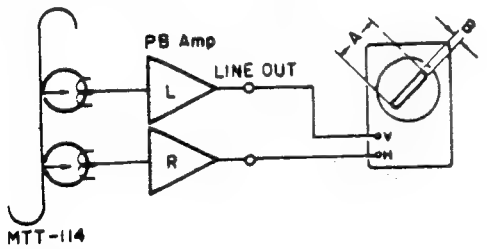
1) Set the THG-801 Tool Plate on the Mechanism Unit and then place the THG-801 Tool Grip on the R/P Head, and check the Tilt Angle between THG-801 Tool Plate and THG-801 Tool Grip. If the THG-801 Tool Grip is tilting toward the front, loosen Tilt with nut (311). If the THG-801 (Tool Grip) is tilting toward the rear, tighten it. Adjust the Tilt Adjustment nut (311) until the THG-801 Tool Grip becomes parallel with the THG-801 Tool Plate.

2) If the Tilt Angle is adjusted more than once, height Adjustment may slip. Always make sure to check height adjustment. If height has slipped, adjust it again. After adjustment, fix screw.

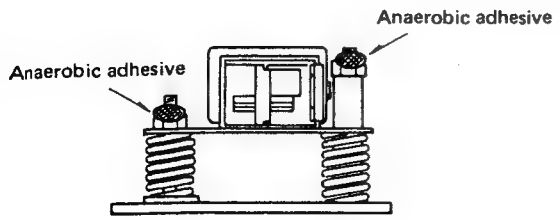


(3) Azimuth adjustments

Play back the A•BEX TCC-153 test tape. Turn the azimuth adjustment nut and adjust so that A of the resurge wave form is maximum and B is minimum. After the azimuth adjustments, re-check the head height with the THG-801 to make sure the height has not deviated.



* After the adjustments, apply anaerobic adhesive on the positions indicated in the diagram.



5. Adjustment and Replacement of Erasing Head

(1) Height Adjustments

Set the THG-801 Tool Plate on the mechanism unit. Using a surface measure of 3.8 mm from the THG-801 Tool Grip, turn adjustment nut (311) and (171) and adjust the height of Erasing Head's center to coincide with the center of the THG-801 Tool Grip. After adjustment, place the THG-801 Tool Grip on the Erasing Head, check to see that the THG-801 Tool Plate and the THG-801 Tool Grip are parallel, and that the Tilt Angle has not changed. Lock after adjustment.

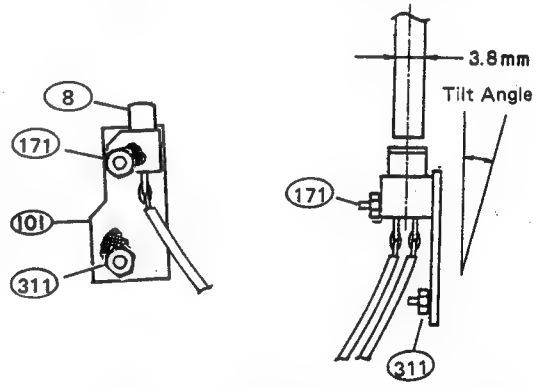
(2) Tilt Angle Adjustment

Set the THG-801 Tool Plate on the mechanism unit. Place the THG-801 Tool Grip on the Erasing Head, and check the gap between the THG-801 Tool Plate and the Tool Grip. If the THG-801 Tool Grip is tilting toward the front, loosen the Tilt adjustment nut (311). If it is tilting toward the rear, tighten it and adjust the Tilt adjustment nut (311) until the THG-801 Tool Grip becomes parallel with the THG-801 Tool Plate.

CAUTION: After adjusting the Tilt Angle, height adjustment may sometimes be warped. Recheck height adjustment. If it is warped, readjust the height. After adjusting, fix nuts (311) and (171).

(3) Erasing Head Replacement

Erase Head may be replaced after removing nuts (311) and (171) which affix it to the deck mechanism. After replacement, adjust the height and the Tilt angle.



6. Height Adjustment of the Tape Guide

Set the THG-801 jig plate onto the mechanism unit and adjust the height by rotating the height adjustment nut 311 so that the 3.8mm section of the THG-801 jig can pass through without contacting the tape guide section of tape guide 103.

7. Checking the Take-up Torque

Load the cassette type torque meter. Check to make sure that the torque meter average reading is within 40 ~ 80 g-cm during playback. If it is not within this range, check the voltage (4.3V ± 0.3V) of the reel motor. If the voltage is low, the torque will be weak; if it is high, the torque will be strong. In addition, check for reel thrust movement in section 8.

8. Adjusting the Reel Thrust Movement

Check to make sure that the reel thrust movement is within 0.2—0.4 mm.

9. Checking the FF and REW Torques

* When using the cassette type torque meter.
  Check to make sure the torque meter indicates more than 80 ~ 160 g-cm at the end of FF and REW.
* When using a modified cassette half.
  Load the modified cassette half; hook the end of the dial tension meter (full scale 100—300 g) onto the triangle section. In the FF (REW) mode, feed the tape in at a rate somewhat slower than the take up speed. Check to make sure the dial tension meter reads more than 60 g-cm.

10. Checking the Back Tension Torque During Record/Playback

Load the cassette type torque meter; check to make sure the torque meter reads between 5 ~ 13 g-cm during playback and that there is no unevenness.
If it is not within this range, check the section on adjusting the reel trust movement; or replace the spring 109.

11. Checking the FF and REW Times

Load a C-60 cassette tape; check to make sure the tape is fast forwarded or rewound within 70—110 seconds. If it is not within this range, check sections 8 and 10.

12. Checking the Operation of the Erase Prevention, Metal and Chrome Switch Operation Arms

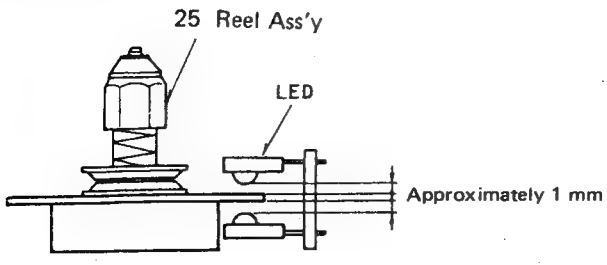
Check to make sure the operation arms 58, 59 operate the switches positively, depending on whether or not there are holes.

13. Checking the EJECT Switch

To check the operation of the EJECT SW with only the mechanism unit, make sure the angle 205 operates the switch positively when the hook lever 203 is operated.

14. Checking the Gap Between the Pulse Detection LED and the Reel Ass'y

Check to make sure the gap between the surface of the shutter section of the reel ass'y and the LEDs is approximately 1 mm.



ADJUSTING THE ELECTRICAL SECTIONS

• Measuring instruments necessary for adjustments

(1) Audio signal generator
(2) Variable resistance attenuator
(3) Electronic voltmeter
(4) Oscilloscope
(5) Frequency counter
(6) Adjustment screwdriver
(7) Trap coil adjustment square stick
(8) Test tapes (SONY TY-224, A-BEX TCC-153, TCC-130
(A-BEX TCC-262)
(DENON DX3H, HD7E)
(9) Transport Check cassette tape
(A-BEX TCC-902) Mirror tape

• Cautions on adjusting

(1) Before adjusting, clean the head surface, capstan and the pinch roller with a gauze or a cotton swab moistened with alcohol.
(2) Demagnetize the R/P HEAD and the E. HEAD with a head eraser.
(3) Completely demagnetize the adjustment screwdriver.
(4) Unless instructed otherwise, set the various controls as follows:
— INPUT volume . . . . . maximum
— OUTPUT LEVEL volume . . . . . maximum
— DOLBY NR switch . . . . . OFF
— MONITOR switch . . . . . TAPE

1. Tape Transport Check

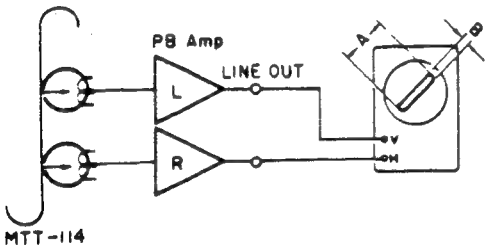
Load the transport check cassette. In the operational mode, illuminate the fixing guides of the R/P HEAD with a lamp and check to make sure the tape edge does not come in contact with the tape guide section.
The tape transport is the most important element in determing the performance of a cassette deck.
Avoid moving the various adjustment screws, nuts, etc., as much as possible. The THG-801 Tool Plate is a tool used primarily for precisely adjusting the height of the tape guide attached to a tape head.
This tools is indispensable in repairing various heads, when replacing heads, and for design purposes, in order to determine the location measurements for mechanical attachments.
Even when the height of the tape guide is accurately measured, during actual tape play, the tape may sometimes warp.
This is due to slight errors in dimensions of those parts which actually come in contact with the tape, such as cassette halves, heads, pinch-rollers, capstan shaft, etc. Therefore a mirror tape is used to confirm proper running of the tape.
In this way, the THG-801 Tool Plate and mirror tape are both used to insure good tape running.

After having confirmed that the setting is correct, the mirror tape may warp anyway. In order to establish the titlt angles of the recording/plaback head and the erase head, adjust (by turning 1/4 – 1/2 turns) the level adjustment nut (311) of the tape guide (103). Refer to the pages on "Adjusting and checking the Mechanism Section" when replacing or adjusting the R/P HEAD.

2. Adjusting the Azimuth

(1) After completing the tape transport check load the test tape (A-BEX TCC-153)

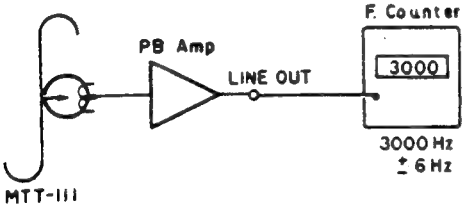
(2) Play back the test tape; adjust the azimuth nut so that section A of the resurge wave form is maximum and section B is minimum.



3. Checking and Adjusting the Tape Speed

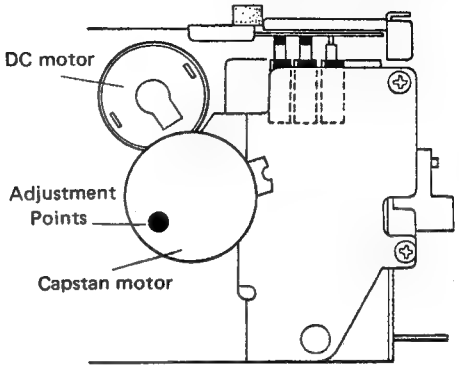
1) Connect the frequency counter to the LINE OUT terminal and load the test tape (SONY TY-224).

2) Playback a test tape. At about halfway through the tape, where the tape transport is stable, adjust the adjustment points on the back of the capstan motor so that the frequency counter will have a reading within the the range of 3,000 Hz ± 6Hz.

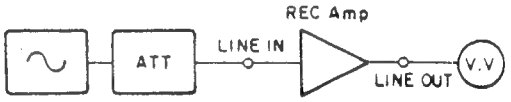


4. Adjusting the Input Sensitivity

(1) Set the MONITOR switch to SOURCE position, the operational mode at STOP. Supply a 400 Hz signal to the LINE IN terminal and set the input signal level (approx. –18 dB) so that the output level at the LINE OUT TERMINAL (L ch) becaomes 0dB.



(2) At the same time, check to make sure the R ch output level is also 0dB.



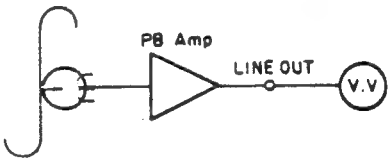
5. Adjusting Playback Section

(1) Adjusting the playback level

Play back the Dolby standard level test tape (A-BEX TCC-130) and adjust RT-101 (L ch), RT-201 (R ch) so that the LINE OUT voltage becomes 0 dB (0.775V).

(2) Adjusting the playback frequency response

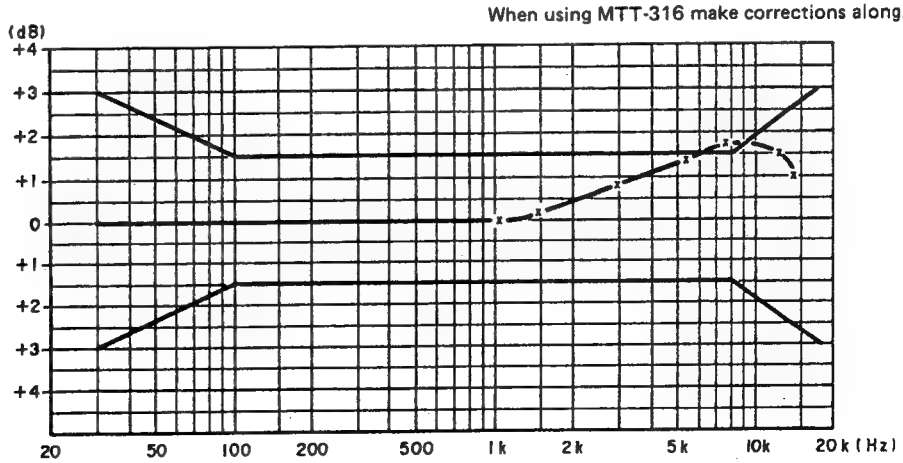
Play back the test tape (A-BEX TCC-262) and check to make sure that the frequency response meets the specifications in the diagram.



Playback Frequency Response

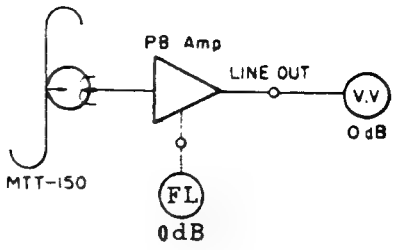
Tape : A-BEX TCC-262

When using MTT-316 make corrections along.



6. Adjusting the FL Meter

After adjusting the playback level, playback the test tape (A-BEX TCC-130) and adjust RT401 (L ch), RT402 (R ch) so that the FL meter indicates 0dB when the LINE OUT terminal level is 0dB (0.775V).

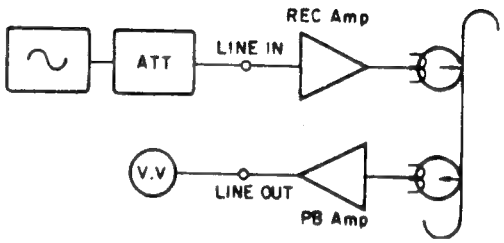


7. Adjusting the Recording Section

(1) Adjusting the record/playback overall frequency response.

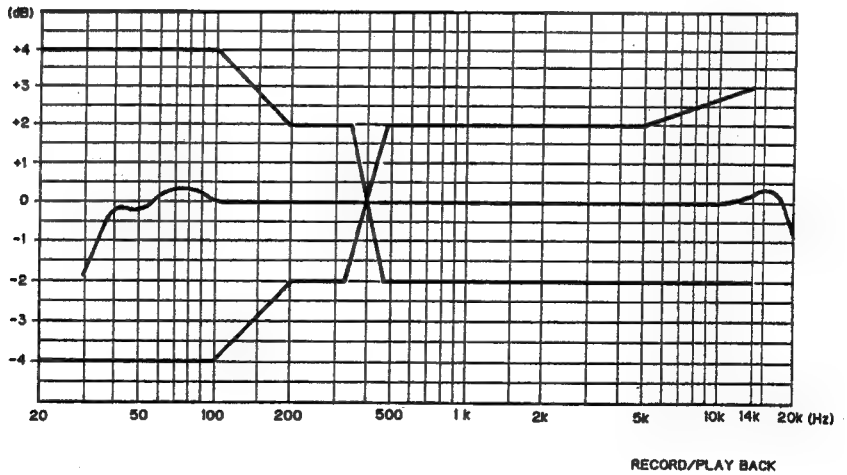
1) Load the test tape DX7/50N; record a signal with an input level of −38 dB, 1 KHz at the LINE IN terminal; play back this recording.

2) Change the frequency of the input signal to 12kHz, record and playback; adjust RT103 (L ch), RT203 (R ch) so that the characteristic standards meet the following diagram when compared to the 1kHz signal output level.



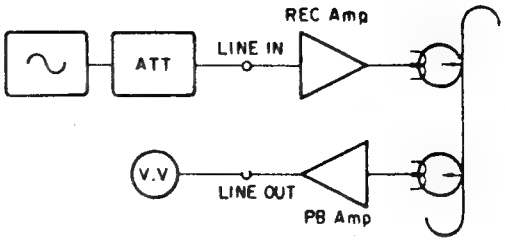
Record/Playback Overall Frequency Response

Tape: HD7E Dolby: off
Level: −20dB from Dolby.



(2) Adjusting the record/playback levels

1) Load the test tape HD7E/C-60 and record a signal of 1kHz (—38 dB).
2) Adjust RT102 (L ch), RT202 (R ch) so that the output level is the same when the MONITOR switch is switched from SOURCE to TAPE position.

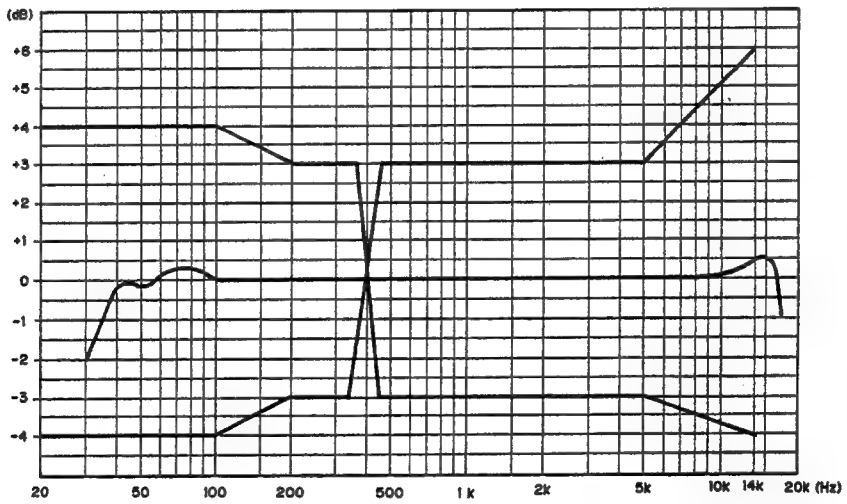


(3) Checking the Dolby C record/playback overall frequency response

1) Set the DOLBY NR switch to the "C" position.
2) Using the test tapes DXM, HD7E/C-60,DX3H, perform record/playback in the same manner as 7-(1).
3) Check to make sure that the record/playback overall frequency response meets the specifications in the diagram.

Dolby C Record/Playback Overall Frequency Response.

Tape: HD7E
Dolby: on, C
Level: —20dB from Dolby



DOLBY-C NR RECORD/PLAY BACK

- **Beat Interference**

Beat interference may result if the unit is used close to an AM tuner. In this case separate the distance between the tuner and the cassette deck.

KU-5880 AUDIO PWB UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC101,102	2630353002	TEA0665	
201,202			
IC301	2630284003	M5219P	
IC302,303	2630257001	M5218P	
IC304	2630355000	AN6256	
TR101,201	2730178022	2SC1740 (R/S)	
106,206			
TR102,202	2750043014	2SK381 (C/D)	
TR103,203	2690015005	DTC124XS	(22K-47K)
304			
TR105,205	2690014006	DTA124XS	(22K-47K)
301~303			
305			
TR306	2740036002	2SD468 (C)	
TR037,308	2730245023	2SC2603 E/F	
D301	2760049008	IS2076	
~303			
RESISTOR GROUP			
⚠ R313	2442036012	RD14B2H3R9JFRT	3.9Ω 1/4W
VR301	2110470007	V1620V20FA103	10KΩA
VR302	2110472005	V16V20FB501K	500ΩB
VR303	2110471006	V16V20FB254-	250KΩB
VR304	2110474003	V162DV30KA104R	100KΩA
RT101,201	2116048064	V06PB104	100KΩB
RT102,202	2116048051	V06PB223	22KΩB
RT103,203	2116048064	V06PB104	100KΩB
CAPACITOR GROUP			
			Ceramic
C102,202	2533627000	CC45SL1H101J	100PF 50V
C101,201	2533635005	CC45SL1H221J	220PF 50V
C167,267	2531055056	CK45B1H221K	220PF 50V
C163,263	2531005006	CK45B1H152K	0.0015μF 50V
C161,261	2531060009	CK45B1H182K	1800PF 50V
C159,259	2531061008	CK45B1H272K	2700PF 50V
C155,255	2531007004	CK45B1H332K	0.0033μF 50V
C318	2531023004	CK45F1H472Z	4700PF 50V
C306,307	2531024003	CK45F1H103Z	0.01μF 50V
310,311			
C321	2539030057	CK45=1E682K	6800PF 25V
C320	2539030073	CK45=1E153K	0.015μF 25V
C109,209	2539031001	CK45=1E473K	0.047μF 25V
114,214			
144,244			
149,249			
C165,265	2539031014	CK45=1E683K	0.068μF 25V

Ref. No.	Part No.	Part Name	Remarks
			Electrolytic
C106,206	2544260045	CE04W1H010M	1μF 50V
119,219			
138,238			
317			
C156,256	2544258002	CE04W1V4R7M	4.7μF 35V
309,319			
C104,204	2544254006	CE04W1C100M	10μF 16V
108,208			
115,215			
118,218			
143,243			
150,250			
153,253			
154,254			
303~305			
312~314			
C164,264	2544252024	CE04W1A470M	47μF 10V
301,302			
315,316			
C110,210	2544260016	CE04W1HR22M	0.22μF 50V
113,213			
145,245			
148,248			
C111,211	2544228951	CE04W1HR68M	0.68μF 50V
112,212			
146,246			
147,247			
			Film
C166,266	2551120026	CQ93M1H152J	0.0015μF 50V
C139,239	2551120068	CQ93M1H332J	0.0033μF 50V
C107,207	2551120084	CQ93M1H472J	0.0047μF 50V
116,216			
142,242			
151,251			
C103,203	2551120097	CQ93M1H562J	0.0056μF 50V
C157,257	2551121009	CQ93M1H682J	0.0068μF 50V
C105,205	2551121012	CQ93M1H822J	0.0082μF 50V
C117,217	2551121025	CQ93M1H103J	0.01μF 50V
152,252			
C322	2554078081	CQ93P2A562J	0.0056μF 100V
OTHER PARTS GROUP			
L101,201	2310825009	BIAS FILTER	
L102,202	2358011008	INDUCTOR	
104,204			
L103,203	2320071005	DOLBY FILTER	
L105,205	2350020013	INDUCTOR 822J	
L106,206	2328044005	BAND TRAP FILTER	
L301	2350019011	INDUCTOR 122J	
T301	2398022002	OSC COIL	
S301	2124611001	PUSH SWITCH	
J301	2048047007	H/P JACK	
J302	2048114008	4P PIN JACK	
CN301	2050233045	4P EH CONNECTOR BASE	
CN302	2050233061	6P EH CONNECTOR BASE	
CN303	2050233090	9P EH CONNECTOR BASE	

• The carbon resistors rated at ¼W are not listed herein.

KU-5870 POWER LOGIC UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC1	2620674005	μPD7506C-69	
IC2, 3	2620447009	BA6109U1	
IC401, 402	2620440006	BA6146	
IC403	2620580005	μPD554C-136	
TR1	2740036002	2SD468 (C)	
TR2	2740078031	2SD882 (Q/P)	
TR3	2730178022	2SC1740 (R/S)	
TR4	2720055029	2SB772 Q/P	
TR5	2710183927	2SA933 (R/S)	
TR6	2710105002	2SA966 (Y)	
TR7	2690022904	DTA143ES	4.7K-4.7K
TR8	2690015005	DTC124XS	22K-47K
TR9	2730178022	2SC1740 (R/S)	
TR11	2690015005	DTC124XS	22K-47K
TR12	2690022904	DTA143ES	4.7K-4.7K
TR13	2730178022	2SC1740 (R/S)	
TR404	2730178002	2SC1740 (R/S)	
TR405	2690029004	RN1204	47K-47K
TR451	2690015005	DTC124XS	22K-47K
D1~10	2760433009	DSM1A2	
D11	2760049011	1S2076A	
D12~20	2760049008	1S2076	
D401, 402			
D451~456			
ZD1, 2	2760052082	HZ11A-3	
ZD3	2760249015	HZ18-3	
ZD5	2760236015	HZ5B-3	
ZD6	2760254000	HZ7B-3	
ZD7	2760218046	HZ9B-1	
ZD8	2760299007	HZ3C-2	
RESISTOR GROUP			
R29	2440077028	RS14B3D180JNBF	18Ω 2W
R427	2412313082	RD14B2E4R7JFRF	4.7Ω 1/4W
RB401	2462013002	RK99=2B473MP5	47KΩx5 1/8W
RB402	2462010092	RK99=2B104MP4	100KΩx4 1/8W
RB403	2462012032	RK99=2B104MP8	100KΩx8 1/8W
RT401, 402	2116048019	V06PB473	47KΩB
CAPACITOR GROUP			
C1, 9 408	2544254006	CE04W1C100M	10μF 16V
C2	2544260045	CE04W1H010M	1μF 50V
C3, 6	2544252024	CE04W1A470M	47μF 10V
C4, 7	2544254938	CE04W1C470M	47μF 16V
C5, 8 15	2544254080	CE04W1C102M	1000μF 16V
C10, 11	2544256033	CE04W1E470M	47μF 25V
C12	2544258086	CE04W1C471M	470μF 35V
C13	2544163003	CE04W1C221M	220μF 16V
C14	2544255018	CE04W1C472M	4700μF 16V
C16, 17 20, 401, 404	2544258002	CE04W1V4R7M	4.7μF 35V

Ref. No.	Part No.	Part Name	Remarks
C18 30, 33	2539031014	CK45=1E683K	0.068μF 25V
C19	2544250055	CE04W0J471M	470μF 6.3V
C21~25	2531004007	CK45B1H102K	1000PF 50V
C28~32	2531024003	CK45F1H103Z	0.01μF 50V
C402, 405	2544260058	CE04W1H2R2M	2.2μF 50V
C403, 406	2544254019	CE04W1C220M	22μF 16V
C407	2544252943	CE04W1A221M	220μF 10V
C409, 410	2531006005	CK45B1H222K	2200PF 50V
C411	2531025002	CK45F1H223Z	0.022μF 50V
CB1	2531153000	CK99B1H102MP4	0.001μF 50V
OTHER PARTS GROUP			
	4170253013	RADIATOR	
CN1	2050233061	6P EH CONNECTOR BASE	
CN2	2050233087	8P EH CONNECTOR BASE	
CN3	2050233074	7P EH CONNECTOR BASE	
CN401	2050233090	9P EH CONNECTOR BASE	
CN402	2050233045	4P EH CONNECTOR BASE	
LE451	3939355001	LN224RP (LS)	
LE452	3939354002	LN424YP (LS)	
LE453	3939352004	LN324GP (LS)	
SW451~458	2124388004	TACT SWITCH	
	4430537000	LED GUIDE	
L401	2358014034	INDUCTOR	220μH
	3934010008	FL METER	
	4410667107	METER HOLDER	

• The carbon resistors rated at ¼W are not listed herein.

WARNING:
Parts marked with ⚠ and/or shading have special characteristics important to safety. Be sure to use the specified parts for replacement.

PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks
201	4118341903	CHASSIS	
	4118341916	CHASSIS	E1
202	KU-5870	PWR LOGIC PWB ASS'Y	
203	KU-5880	AUDIO PWB ASS'Y	
204	KU-58702	CONTROL PWB ASS'Y	
205	KU-58701	COUNT/METER P. ASS'Y	
206	1030913108	FRONT ESC ASS'Y	BK
	1030913111	FRONT ESC ASS'Y	GO
207	VM 860	CASSETTE MECHA	
208	4118347101	EARTH PLATE (A)	
209	4118383000	SHIELD LABEL	
210	4118346225	ANGLE	
⚠211	2335336001	POWER TRANS (220-240)	
	2335335002	POWER TRANS (120)	EU
	2335337000	POWER TRANS (MULTI)	E1
212	4118342627	TRANS BRACKET	
⚠213	2062002031	AC CORD WITH PLUG	E2
	2062031002	AC CORD	EU
	2006019310	AC CORD	EA
	2006031026	AC CORD	E1
	2062024006	AC CORD WITH LABEL	EK
⚠214	4450056008	CORD BUSH	
	MD-2982H	CORD BUSH	EA
⚠215	KU-58703	POWER SW PWB ASS'Y	
216	4118343302	POWER SW BRACKET	
217	4618130009	CUSHION (A)	
218	1058089108	BOTTOM COVER	
219	4610162004	FELT PAD	
220	1430460002	METER WINDOW	
221	1290065207	COLOR FILTER	
222	1130802106	PUSH KNOB (A)	BK
	1130802119	PUSH KNOB (A)	GO
223	3984010008	FL METER	
224	2124388004	TACT SWITCH	
225	1130805006	PUSH BUTTON (A)	BK
	1130805019	PUSH BUTTON (A)	GO
226	1130806005	PUSH BUTTON (B)	BK
	1130806018	PUSH BUTTON (B)	GO
227	2090110018	EARTH WIRE	
228	EP-4772	CORD HOLDER	
229	4318098108	PUSH SW LEVER	
230	4310220107	P.S. LEVER ASS'Y	BK
	4310220110	P.S. LEVER ASS'Y	GO
231	4310217000	EJECT KNOB	BK
	4310217013	EJECT KNOB	GO
232	4318104102	EJECT PLATE	
233	1441480204	FRONT PANEL ASS'Y	BK
	1441480217	FRONT PANEL ASS'Y	GO
234	—	—	
235	—	—	
236	1120484204	VOL KNOB (A)	BK
	1120484217	VOL KNOB (A)	GO
237	1120485009	VOL KNOB (B)	BK
	1120485012	VOL KNOB (B)	GO
238	1030919102	C WINDOW	BK
	1030919115	C WINDOW	GO
239	4110564102	C WINDOW ESC	BK
240	1028319280	TOP COVER	BK
	1028319248	TOP COVER	GO
241	4770224031	SP WASHER	
242	4410667107	METER HOLDER	
243	KU-58704	LED PWB ASS'Y	
244	KU-58801	VR PWB ASS'Y	
245	4410668009	VOL PLATE	
246	4458004007	WIRE CLAMPER	
247	1338085000	REMOTE COVER LABEL	
248	4458028009	CORD HOLDER	E2
250	2124611001	PUSH SWITCH	
251	2123315023	VOLTAGE SELECTOR	E1
252	2048114008	4P PIN JACK	
253	2110474003	V1620 V30KA 104R	INPUT VR
254	2110470007	V1620 V20 FA103	OUTPUT VR
255	2048047007	H/P JACK	
257	2110472005	V16 V20FB 501K	BIAS VR
258	2110471006	V16 V20FB 254-	BAL. VR
⚠ 259	2129136028	POWER SW	
⚠ 260	2020022008	FUSE HOLDER	EK, E1
⚠ 261	2061031032	FUSE (0.16)A	EK
⚠	2061031045	FUSE (0.25)A	E1
301	4737500015	3x8 CBTS (P)-Z	
302	4737501001	3x10 CBTS (P)-Z	
303	4713303016	3x6 CBS-Z	
304	4737002005	3x6 CBTS (S)-Z	
305	4737004003	4x8 CBTS (S)-Z	
306	4737002018	3x8 CBTS (S)-Z	
307	4737003004	3x8 CFTS (S)-Z	
308	4737500044	3x8 CBTS (P)-B	
309	4737503038	4x10 CFTS (P) BK	BK
310	4713305014	3x10 CBS-Z	
311	4751106042	WASHER	
312			
313			
314			
315	4737503041	4x10 CTTS (P) NI	GO
316	4730359014	3x16 CBRTS	

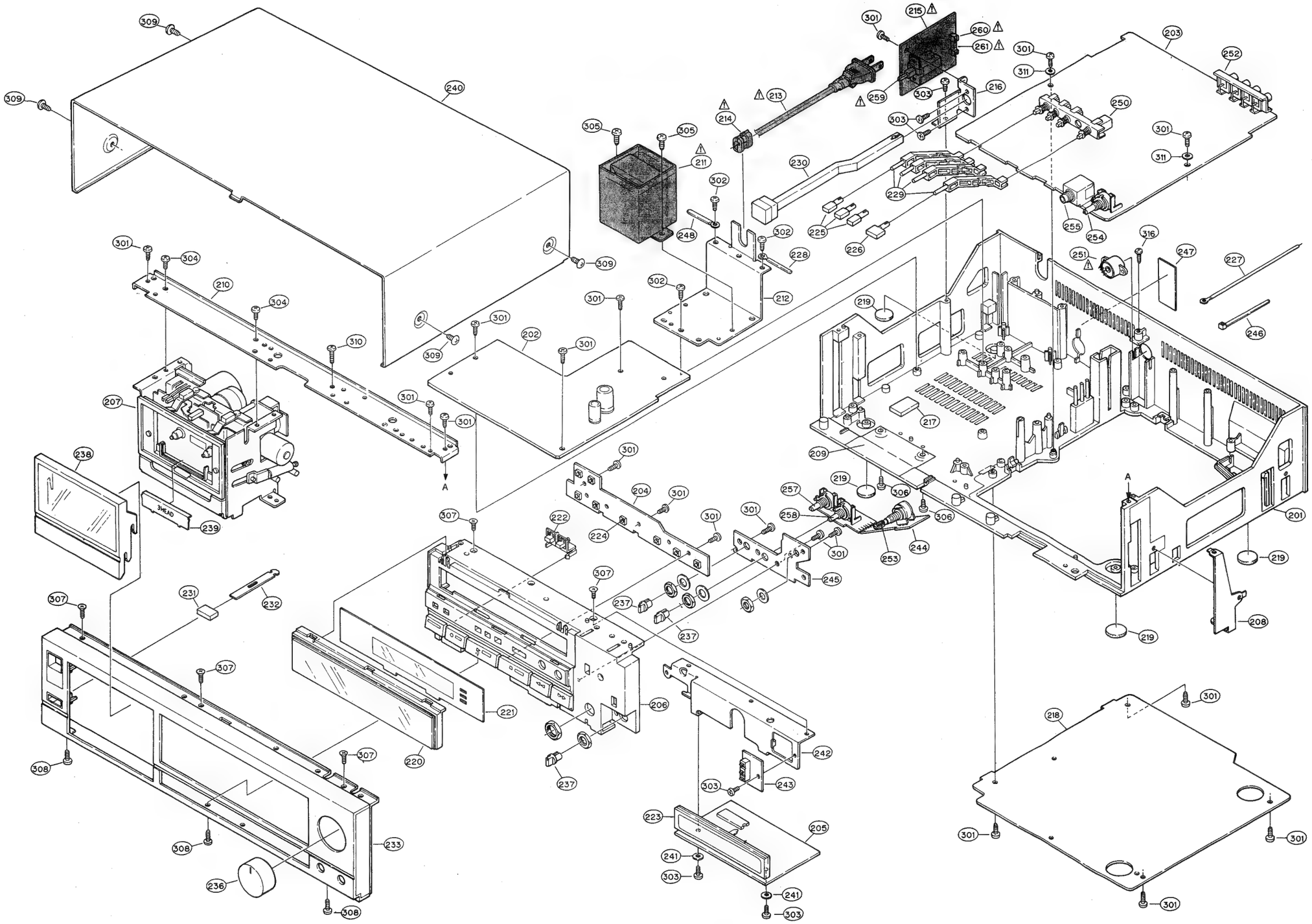
WARNING:
Parts marked with ⚠ and/or shading have special characteristics important to safety. Be sure to use the specified parts for replacement.

Remarks symbols in the parts list refer to the following countries and areas.

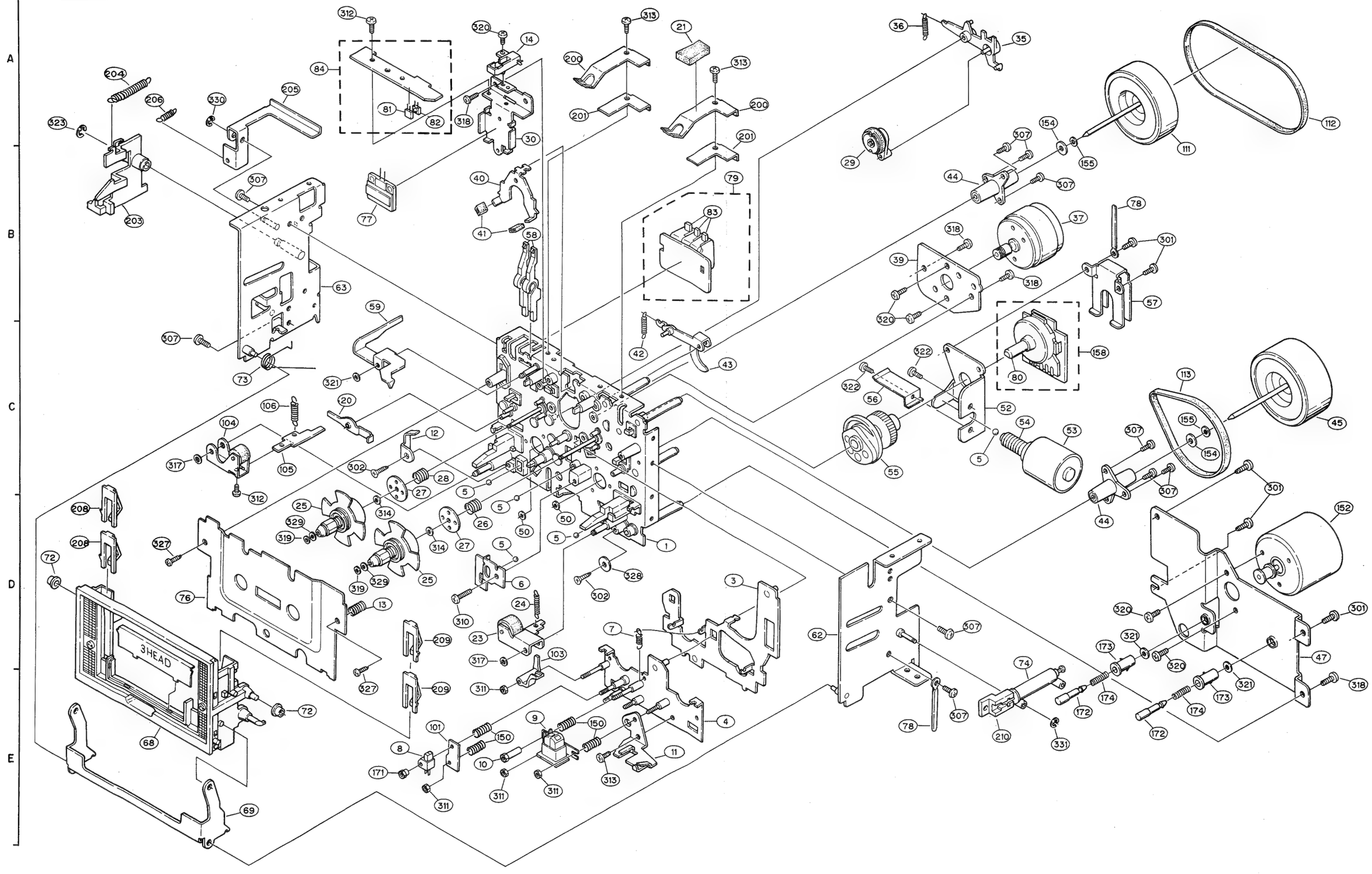
EA: Australia
EK: United Kingdom
EU: U.S.A.
E1: Multiple voltage model
E2: European continent

* Remarks symbols (BK) in the parts list means that the color of the front panel is Black.

EXPLODED VIEW OF CABINET AND CHASSIS GROUP



EXPLODED VIEW OF MECHANISM VM860 UNIT



PARTS LIST OF CASSETTE MECHANISM EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remarks
1	4118229436	MECHA BASE ASS'Y	
3	4318076405	HEAD SLIDER ASS'Y	
4	4310218203	HEAD PLATE ASS'Y	
5	4258011009	STEEL BALL ASS'Y	
6	4318080200	BALL GUIDE PLATE	
7	4638230002	SPRING	
8	3918826001	ERASE HEAD	
9	3918076107	R/P HEAD	
10	4438671104	SPECIAL NUT	
11	4418994102	CORD HOLDER	
12	4428165002	SLIDER SPACER	
13	4638842005	SPRING	
14	2124621004	LEAF SWITCH	
20	4338224208	STOPPER	
21	4610154083	CUSHION	
23	4338194105	P ROLLER ARM ASS'Y	
24	4638231108	SPRING	
25	4218400003	REEL SSS'Y	
26	4638261000	SPRING	
27	4338199003	FRICTION PLATE	
28	4630483006	SPRING	
29	4330449104	I. ARM(B)G ASS'Y	
35	4338236209	IDLER ARM(A) ASS'Y	
36	4638271003	SPRING	
37	2178069007	DC MOTOR	
38	4218403000	PULLEY	
39	4418962406	DC MOTOR F i,X PLATE	
40	4318081500	BRAKE	
41	4618127106	BRAKE SHOE	
42	4638234105	SPRING	
43	4338232203	BRAKE ARM ASS'Y	
44	4438648302	METAL HOUSING ASS'Y	
45	4210389009	FLY WHEEL ASS'Y	
47	4122025008	BACK PLATE	
50	4770090074	WASHER	
52	4418966208	CAM MOTOR HOLDER	
53	2178070009	DC MOTOR	
54	4248025607	WORM GEAR	
55	4248027401	CAM	
56	4140414002	OIL FENCE	
57	4428018308	ENCODER BRACKET	
58	4338225304	HOLE SENSOR (1)	
59	4338226400	HOLE SENSOR (2)	
62	4428147509	RIGHT STAY ASS'Y	
63	4428145200	LEFT STAY ASS'Y	
68	1030922209	CASSETTE BOX	
69	4330459204	CASSETTE BOX HOLDER	
72	4318097002	COLLAR	
73	4638236116	BOX SPRING	
74	4698013104	AIR DUMPER	
76	1448508613	ESC PLATE	
77	3939179012	LN0105 YP4(YW)	
78	4458028009	CORD HOLDER	
79	KU-51000	E HOLE SENS PWB ASS'Y	
80	2123331308	ROTARY ENCODER	
81	3939178000	LN25RCP	
82	3939026000	PN150	
83	2129201005	SLIDE SWITCH	
84	KU-58901	R PULSE SENS PWB ASS'Y	
101	4490030107	E HEAD BASE	
102	4638621103	SPRING	
103	4338193009	TAPE GUIDE	
104	4338196103	P. ROLLER ARM-L ASS'Y	
105	4338198101	P. ROLLER ARM PLATE	
106	4630480009	SPRING	
109	4638234105	SPRING	
111	4218365504	CAPSTAN WHEEL ASS'Y	
112	4238028108	BELT	
113	4238030013	BELT	
150	4638819012	SPRING	
152	2178034105	C P MOTOR	
153	4218383007	MOTOR PULLEY	
154	4258058004	WASHER	
155	4770090016	WASHER	
158	KU-5890 2	ENCODER PWB ASS'Y	
171	4438818006	SPECIAL NUT	
172	4228175001	CAPSTAN JOURNAL(1)	
173	4228176107	CAPSTAN JOURNAL(2)	
174	4638640100	SPRING	
200	4638829303	CASSETTE SPRING	
201	4428154107	C P SUPPORT	
203	4338269409	HOOK	
204	4638256002	SPRING	
205	4128829004	ANGLE	
206	4638257001	SPRING	
208	1038243304	CASSETTE SUPPORT(L)	
209	1038243317	CASSETTE SUPPORT(R)	
210	4338271303	DAMPER GUIDE	
301	4377002005	3x6 CBTS(S)-Z	
302	4737500028	3x8 CFTS(P)-Z	
307	4713202010	2.6x5 CBS	
310	4713802025	2.6x14 CBS	
311	4756020000	2N	
313	4713201011	2.6x4 CBS-Z	
314	4770090003	WASHER	
317	4751121108	SLIT WASHER	
318	4737500002	3x6 CBTS(P)-Z	
319	4761114008	1.5E RING	
320	4713802012	2.6x3 CBS-Z	
321	4751120109	SLIT WASHER	
322	4713801039	2x3 CBS-Z	
323	4761003009	3E RING	
327	4730154028	2x8 CRTS(P)-Z	
328	4751005004	4W	
329	4751139006	2.1W	
330	4761002000	2.5E RING	
331	4761001001	2E RING	

KU-5890 MECHANISM P.W.B UNIT

Ref. No.	Part No.	Part Name	Remarks
R901	2412332047	RD14B==331J	330Ω
R902	2412332005	RD14B==221J	220Ω
	212331308	ROTARY ENCODER	
	2129201005	SLIDE SWITCH	
	3939178000	LN25RCP	
	3939026000	PN150	
	2042167006	7P EH CON. CORD	
	2050185067	6P WIRE HOLDER	

• The carbon resistors rated at ¼W are not listed herein.

ACCESSORIES GROUP

Ref. No.	Part No.	Part Name	Remarks
	2032101001	2P CONNECTOR CORD	
*	5111428000	INST. MANUAL	
*	5111434007	INST. MANUAL	EU only
⚠	2033687007	PLUG ADAPTER	E1 only

CARTON CASE GROUP

Ref. No.	Part No.	Part Name	Remarks
*	5011108006	CARTON CASE	
*	5011103014	CARTON CASE	EA only
	5038054007	PACKING	
	5038049009	SUB PACKING	EA only
	5058006048	ENVELOPE	

WARNING:
Parts marked with ⚠ and/or shading have special characteristics important to safety. Be sure to use the specified parts for replacement.

Remarks symbols in the parts list refer to the following countries and areas.

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E1: Multiple voltage model
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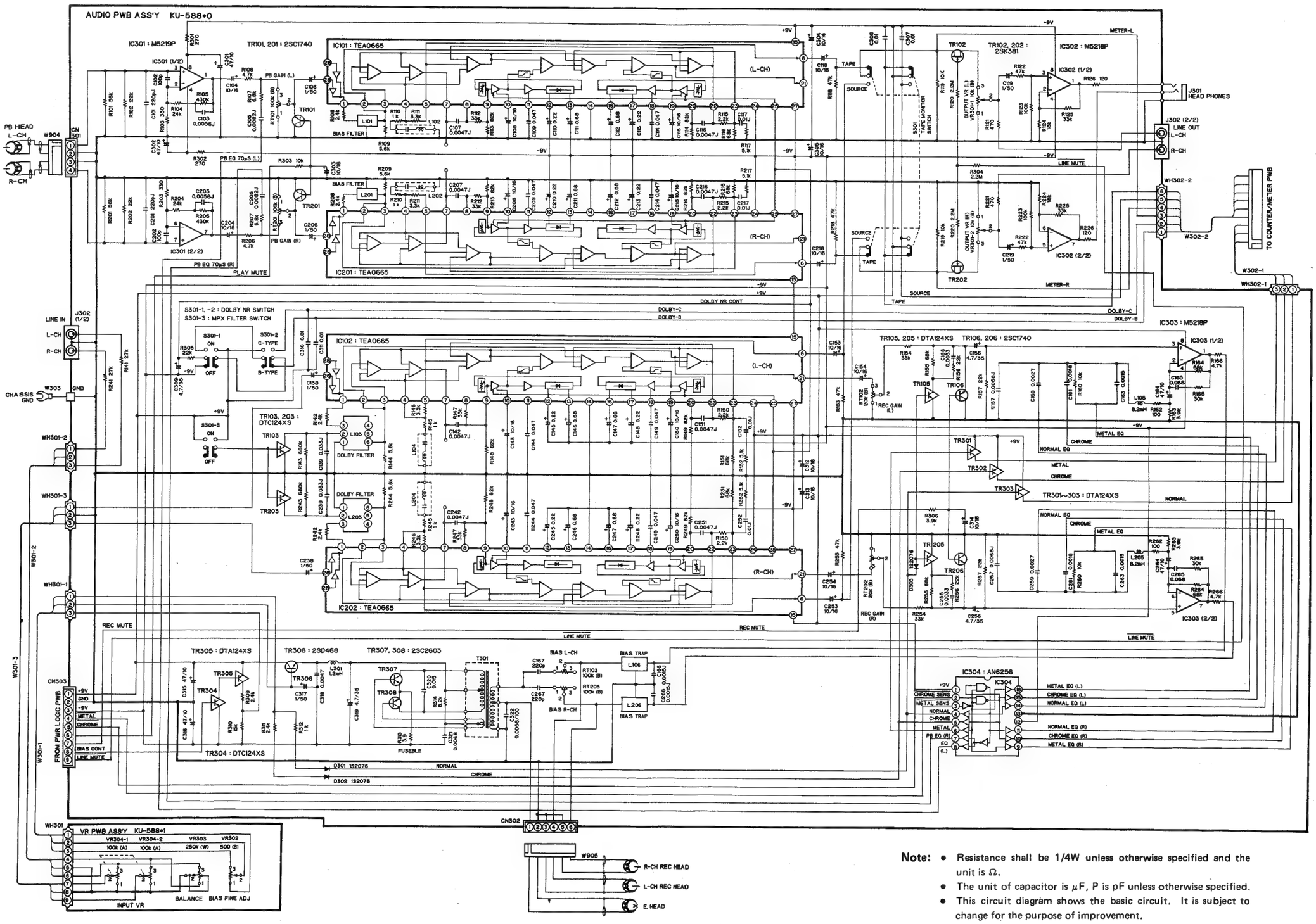
* Remarks symbols (BK) in the parts list means that the color of the front panel is Black.

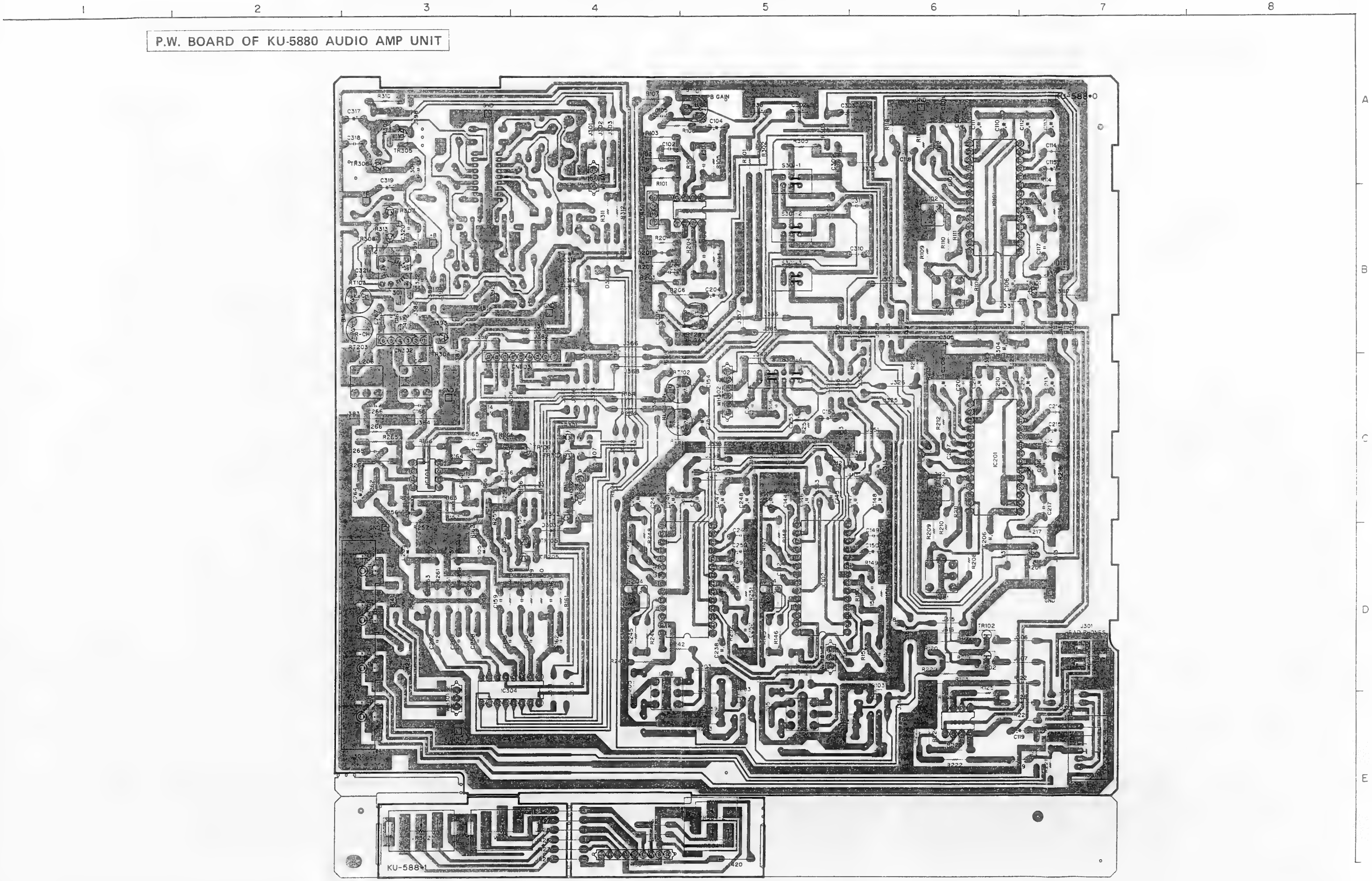
SCHEMATIC DIAGRAM OF AUDIO AMP UNIT



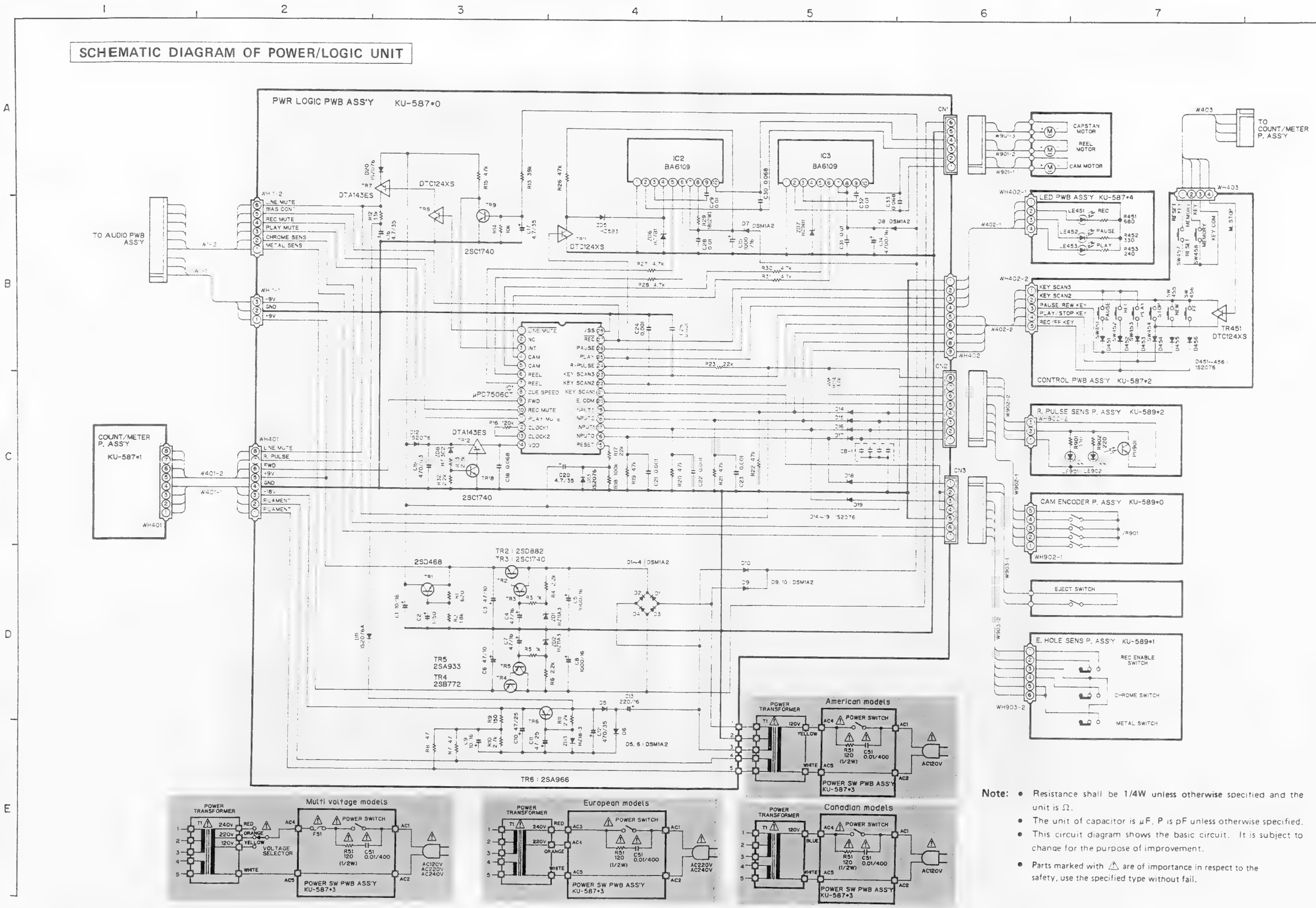
Note:

- Resistance shall be 1/4W unless otherwise specified and the unit is Ω.
- The unit of capacitor is μF, P is pF unless otherwise specified.
- This circuit diagram shows the basic circuit. It is subject to change for the purpose of improvement.

P.W. BOARD OF KU-5880 AUDIO AMP UNIT



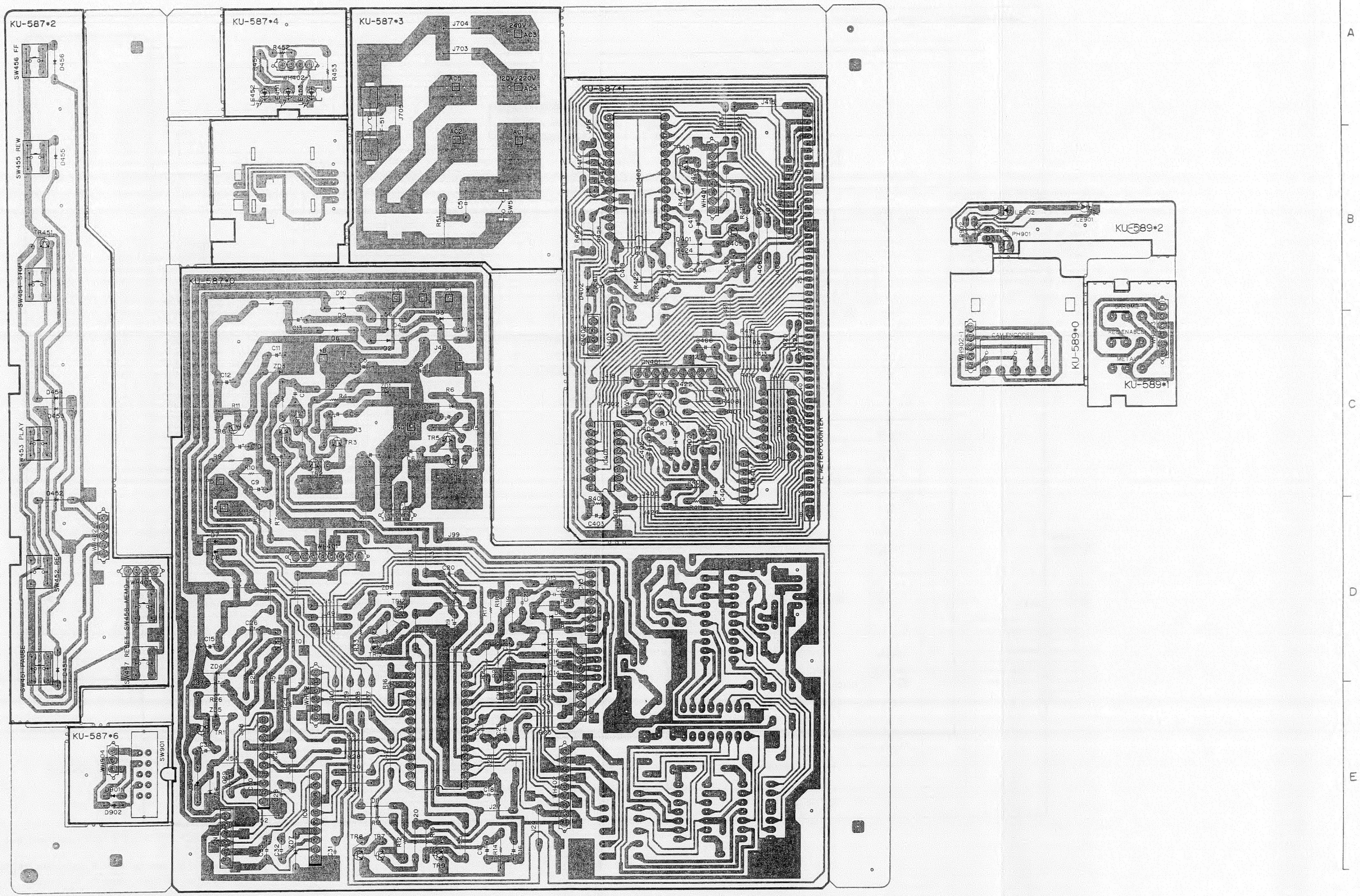
SCHEMATIC DIAGRAM OF POWER/LOGIC UNIT



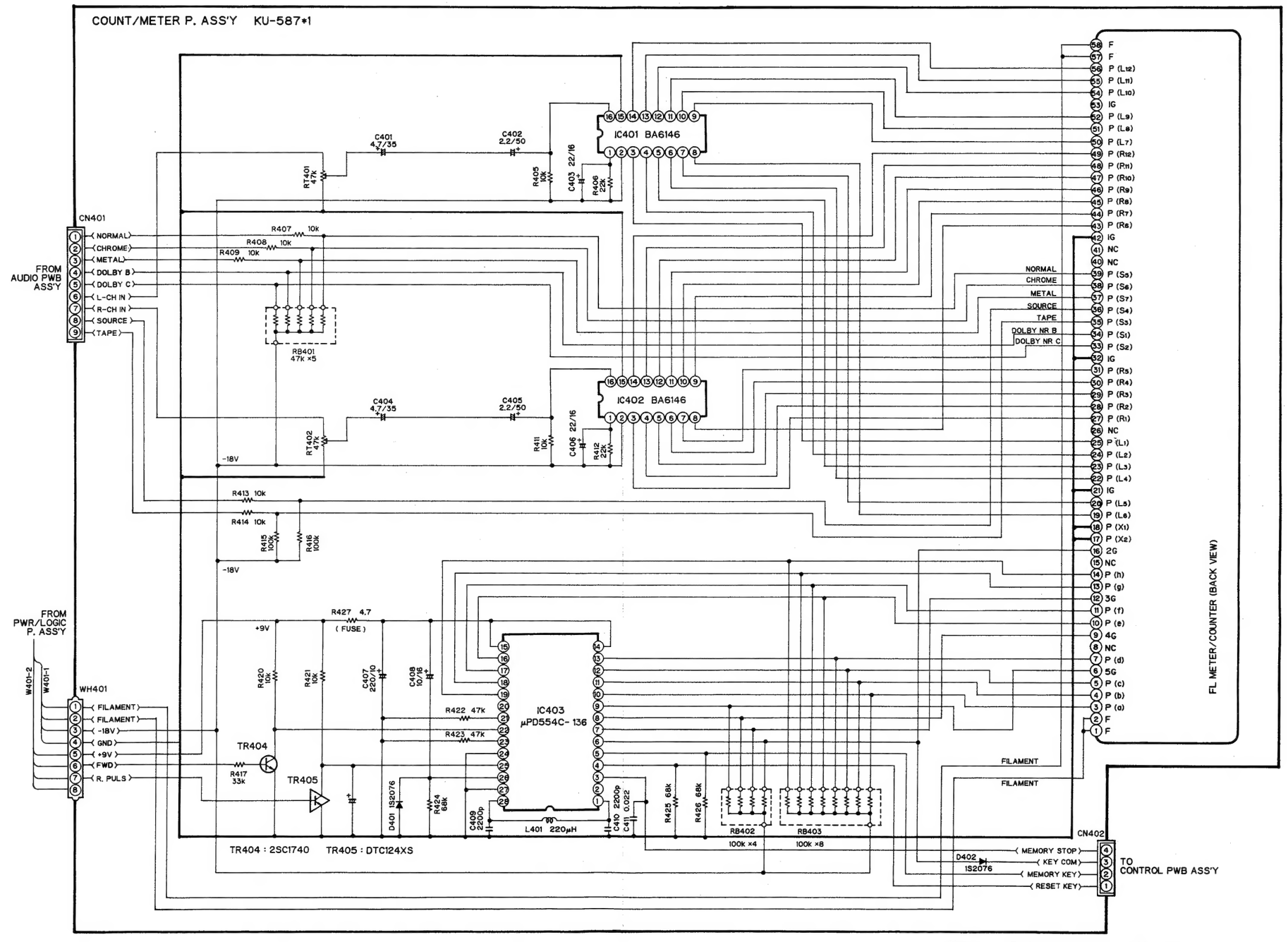
Note:

- Resistance shall be 1/4W unless otherwise specified and the unit is Ω.
- The unit of capacitor is μF, P is pF unless otherwise specified.
- This circuit diagram shows the basic circuit. It is subject to change for the purpose of improvement.
- Parts marked with ⚠ are of importance in respect to the safety, use the specified type without fail.

P.W. BOARD OF KU-5870 POWER/LOGIC UNIT AND KU-5890 MECHANISM UNIT

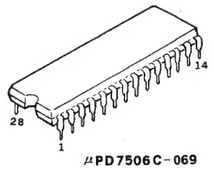


SCHEMATIC DIAGRAM OF COUNTER METER UNIT

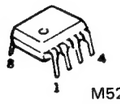


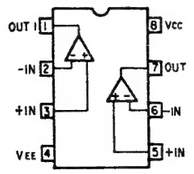
Note:
- Resistance shall be 1/4W unless otherwise specified and the unit is Ω.
- The unit of capacitor is μF, P is pF unless otherwise specified.
- This circuit diagram shows the basic circuit. It is subject to change for the purpose of improvement.

• I C

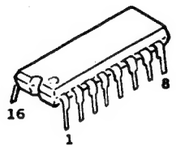


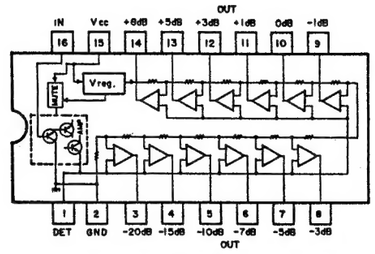
μPD7506C-069
TEA0665
μPD554C-136



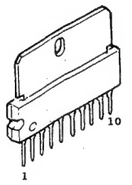


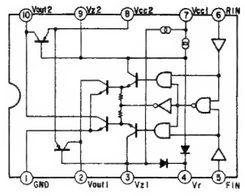
M5218P
M5219P





BA6146





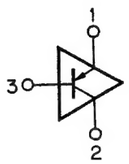
BA6109

• Transistors

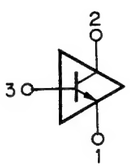
2SA933
2SC1740
2SC2603

2SA966
2SD468

DTA Type DTC Type

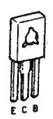


DTA124XS
DTA143ES



DTC124XS

2SK381



2SB772
2SD882

• Diodes

1S2076

HZ3C-2
HZ5B-3
HZ7B-3
HZ9B-1
HZ11A-3
HZ18-3

WIRING DIAGRAM

KU-589*0
CAM ENCODER P. ASS'Y
WH902-1
W902-1
CAPSTAN MOTOR
REEL MOTOR
CAM MOTOR
W901-3
W901-2
W901-1
CN1
POWER TRANSFORMER
RED
BLACK
RED
ORANGE
ORANGE
240V
220V
FUSE
0V
POWER TRANS
KU-587*3
POWER SW PWB ASS'Y
AC3
AC4
AC5
AC1
AC2
AC LINE IN
(MARK)
W303
CHASSIS GND
C.GND
KU-589*2
R. PULS SENS P. ASS'Y
WH902-2
W902-2
K. INPUT 0
K. INPUT 1
K. INPUT 2
K. INPUT 3
E. COM
GND
+5.5V
R. PULSE
CAM ENCODER
REEL PULSE
CN2
KU-587*0
PWR LOGIC PWB ASS'Y
WH1-2
LINE MUTE
BIAS CONT
REC MUTE
PLAY MUTE
CHROME SENS
METAL SENS
W1-2
WH1-1
-9V
GND
+9V
W1-1
CN303
KU-588*0
AUDIO PWB ASS'Y
CN301
PB IN R-CH
GND
GND
PB IN L-CH
W904
R-CH
PB HEAD
L-CH
CN302
REC OUT R-CH
GND
REC OUT L-CH
GND
GND
ERASE OUT
W905
R-CH
REC HEAD
L-CH
E.HEAD
EJECT SW
W903-1
CN3
EJECT
KEY SCAN 1
REC ENABLE
KEY SCAN 1
GND
CHROME SENS
METAL SENS
KEY MATRIX
AUTO TAPE SELECTOR
KU-589*1
REC ENABLE SW
CrO2 SW
METAL SW
E. HOLE SENS P. ASS'Y
WH903-2
W903-2
WH401
FILAMENT
FILAMENT
-18V
GND
+9V
FWD
REEL PULS
REEL PULSE
LINE MUTE
GND
REC LED
PAUSE LED
PLAY LED
KEY SCAN3
KEY SCAN2
PAUSE/REW KEY
PLAY/STOP KEY
REC/FF KEY
WH402
WH302-1
NORMAL
CHROME
METAL
WH302-2
DOLBY B NR
DOLBY C NR
METER L-CH
METER R-CH
SOURCE MONI.
TAPE MONI.
WH301-1
BIAS HIGH
BIAS OUT
BIAS LOW
WH301-2
VR IN R-CH
GND
VR IN L-CH
WH301-3
VR OUT L-CH
GND
VR OUT R-CH
W401-1
W401-2
W402-2
W302-1
W302-2
W402-1
W301-1
W301-2
W301-3
CN401
CN402
MEMORY STOP
KEY COM
MEMORY KEY
RESET KEY
KU-587*1 COUNT/METER P. ASS'Y
KU-587*4
LED PWB ASS'Y
WH403
KU-587*2
CONTROL PWB ASS'Y
KU-588*1
VR PWB ASS'Y
WH301
W403